

# PATENT COOPERATION TREATY

## PCT


### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 14 JUN 2005

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Applicant's or agent's file reference ...	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/IT2004/000383	International filing date (day/month/year) 01.07.2004	Priority date (day/month/year) 02.07.2003	
International Patent Classification (IPC) or national classification and IPC A61B1/24			
Applicant GARGIULO, Vincenzo			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p style="margin-left: 20px;">a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p style="margin-left: 20px;">b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand  15.02.2005		Date of completion of this report  14.06.2005	
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer  Manschot, J  Telephone No. +31 70 340-4451	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IT2004/000383

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements**\* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-11 as originally filed

**Claims, Numbers**

1-5 received on 15.02.2005 with letter of 07.02.2005

**Drawings, Sheets**

1/3-3/3 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

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1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:
- ☐ the entire international application,
  - ☒ claims Nos. 4,5  
because:
    - ☒ the said international application, or the said claims Nos. 4,5 relate to the following subject matter which does not require an international preliminary examination (specify):  
**see separate sheet**
    - ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
    - ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
    - ☐ no international search report has been established for the said claims Nos.
    - ☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:
      - the written form ☐ has not been furnished
      - ☐ does not comply with the standard
      - the computer readable form ☐ has not been furnished
      - ☐ does not comply with the standard
    - ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
  - ☐ See separate sheet for further details

**INTERNATIONAL PRELIMINARY REPORT  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-3
	No: Claims	
Inventive step (IS)	Yes: Claims	1-3
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-3
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

Section III

1. Method claim 4 defines a method of diagnosis practised on the human body in that it diagnoses micro-fractures of the tooth or implants, which enables the physician (dentist) to determine the course of treatment. Claim 5 defines a method for treatment of the human or animal body by therapy practised on the human or animal body, since polymerising (curing) of composites in the mouth is a part of treating the patient. Therefore no preliminary international examination is required for the subject-matter of these method claims (see Article 34 (4) (a) (i) PCT and Rule 67.1 (iv) PCT).

Section V

1. The nearest prior art is formed by document D1: PATENT ABSTRACTS OF JAPAN vol. 0163, no. 15 (C-0961), 10 July 1992 (1992-07-10) & JP 04 090753 A (HIDEYUKI TAKEUCHI), 24 March 1992.

Document D1 discloses an apparatus for illumination of the vestibular/lingual cavity as defined in the preamble of claim 1.

The present invention differs from this prior art by the specific arrangement of the punctiform light sources, which solves the problem of a more complete illumination of the cavity. In particular (as far as clear from the drawings: see however section VIII), neither D1 nor any of the other documents cited does disclose or hint at providing the punctiform light points at the "inner surface of the projecting structure of the retractor" to illuminate the incisive teeth and the median lines.

Therefore, the subject-matter of claim 1 and of claims 2 to 3 dependent thereon, meets the requirements of novelty and inventive step as laid down in Article 33 (2)-(4) PCT.

Section VIII

1. Claim 1 does not meet the requirements of Article 6 PCT, since the claim is not clear. In particular, the claim refers to "the channel" and "the projecting structure", without, however, clearly defining these features. Consequently, the location of the punctiform light sources on the retractors is unclear. Furthermore, the expression "inner surface" of the projecting structure is not unique or clear.

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

PCT/IT2004/000383

Amended Claims

1. Apparatus for the illumination of the vestibular/lingual cavity, comprising a symmetrical couple of retractors (A,B) for the oral cavity, each retractor having a series of punctiform light sources distributed thereon and deriving each from a corresponding termination of an optical fibre on the external surface of the retractor,
- 5 the apparatus producing a complete, uniform and close illumination from the inside of the mouth, both from the lingual side and from the vestibular side of each tooth; said couple of retractors being located on a support structure (7, 7', 7'') arranged on an U-like configuration, and said structure (7, 7', 7'') providing at the same time an inlet, through its lower termination, of optical fibres that branch off on the first (A)
- 10 and second (B) retractor; the apparatus comprising also regulation means for the adaptation of the normal or initial opening of the retractor through the introduction in said support structure (7, 7', 7'') of a semirigid small-bow, the latter being selected from an available set according to the typology of oral cavity on which the operation is to be performed and according to the kind of operation; said optical fibres which
- 15 end on the surface (6') of the retractor having differing tilts, said fibres being however arranged equidistantly, both from the inside to the outside and from top to bottom, taking account of the visualisation requirement of the operation field both in the closed and in the opened condition of the set of teeth;
- the apparatus being characterised in that three zones are selected for the arrangement
- 20 of the punctiform light sources on the surface (6') of the retractors:
- a first series (3) of outgoing optical fibres being arranged in the projecting and more external part of the retractor, almost at the limit of the edge of the channel (1), to effectively illuminate, in the first place, from this position, the bottom of the lingual/vestibular cavity and in particular the molar teeth;
  - 25 - a further series of outgoing optical fibres corresponding to points (4) located in an intermediate zone of the inner plane of the retractor, said points being suited to

illuminate the premolars, and

- a further series of light points, or punctiform light sources (5), being arranged approximately at the inner surface of the projecting structure of the retractor, in order to illuminate the incisive teeth and the median lines.

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2. Apparatus for the illumination of the vestibular/lingual cavity, comprising a symmetrical couple of retractors (A,B) for the oral cavity, each retractor having a series of punctiform light sources distributed thereon and deriving each from a corresponding termination of an optical fibre on the external surface of the retractor,  
10 the apparatus producing a complete, uniform and close illumination from the inside of the mouth, both from the lingual side and from the vestibular side of each tooth; said couple of retractors being located on a support structure (7, 7', 7'') arranged on an U-like configuration, and said structure (7, 7', 7'') providing at the same time an inlet, through its lower termination, of optical fibres that branch off on the first (A)  
15 and second (B) retractor; the apparatus comprising also regulation means for the adaptation of the normal or initial opening of the retractor through the introduction in said support structure (7, 7', 7'') of a semirigid small-bow, the latter being selected from an available set according to the typology of oral cavity on which the operation is to be performed and according to the kind of operation; characterised in that a set  
20 of small bows (11) is available to the apparatus, each of them being suited to a corresponding type of oral cavity, and to a respective small-size, medium-size, or large-size opening of the mouth on which the operation is to be carried out.

3. Apparatus for the illumination of the vestibular/lingual cavity according to claim  
25 2, wherein some of the available small bows have not the same length and/or do not cause the same opening-out on the two opposite sides thereof, and are employed in operations requiring, in order to open out the oral cavity, a specific asymmetric bias on only one side of the patient's mouth.



4. Use of the apparatus for the illumination of the vestibular/lingual cavity according to claim 1, wherein the apparatus is used as an endoscopic lamp to optimise the visualisation of inter-proximal caries and to permit the examination of the tooth
- 5 through the transmitted light, when it is positioned behind the tooth in order to diagnose micro-fractures of the tooth or implants contained therein.
5. Use of the apparatus for the illumination of the vestibular/lingual cavity according to claim 1, wherein the apparatus is used as a polymerising, that is as a curing lamp,
- 10 having a diode which emits cold light to cause hardening of composites, the apparatus being provided with a stopwatch specific for the regulation of the composites' hardening.